

## CLAIMS

1/ A method of calibrating a camera lens system having adjustable parameters as used on site on a camera provided with sensors for delivering signals representative of at least pan and tilt angles of the camera , the method comprising the steps of :

(a) calibrating, once for all, determining intrinsic characteristics of the camera lens system while it is mounted on a reference camera and establishing a computer file containing said intrinsic characteristics for obtaining a first calibration which is specific to the lens system and is carried out once for all; and

(b) further calibrating, on site, each time the lens system is used, an assembly comprising the on-site camera and the lens system mounted on the on-site camera so as to define transfer functions relating signals from said camera sensors and from lens system sensors delivering signals responsive to values of said adjustable parameters to actual values of said parameters, based on said file and of signals obtained by shooting predetermined characteristic points in a scene observed by the on-site camera .

2/ A calibration method for generating a correspondence table between at least output signals from zoom and focus sensors placed on a camera lens and constituted by digital encoders, and actual values of focal length and geometrical deformation for a camera on which the lens system is mounted, said method comprising:

(a) performing a stage once and for all, comprising determining intrinsic characteristics of the lens, which stage is performed after the lens has been mounted on a camera, and comprising the following steps :

- taking a plurality of shots with the camera in different pan and tilt orientations and different zoom and focus values for obtaining respective successive images,

- for each shot, storing output signals from the encoders and positions in the image of at least two points,

including a nearer point and a farther point in a scene observed in the shot; and

- drawing up an intrinsic calibration table by comparing values of the output signals and the positions of the points in the images by the camera; and

(b) a stage performed on site after the lens has been mounted on a camera to be used on site, comprising the steps of :

- specifying operating conditions; and

- repeating only some of the operations performed in stage (a) solely insofar as they are necessary for resetting origins.

3/ A method according to claim 1 , wherein the nearer point observed during stage (a) is a point source.

4/ A method according to claim 3 , wherein the point source is a laser diode placed at a distance that is greater than and close to a shortest distance for which focussing is possible.

5/ A method according to claim 1 , characterized in that all of the measurements of stage (a) are performed prior to performing all computations which are later performed subsequently and together.

6/ A method according to claim 2, wherein during calculations the lens is represented by a mathematical model making use solely of functions having a single input variable.

7/ A method according to claim 2, comprising the steps of converting a set consisting of all data delivered by the sensors and representing a condition of the instrumented camera into an audio signal, and transporting and recording said set in an audio-video environment .